

REMARKS

Applicants' representative would like to thank Examiner Nguyen for the courtesies extended during a telephonic interview on March 31, 2004. During the interview, the Examiner requested a copy of the English Translation of the Specification and Request for Approval of Drawing Changes, complete with the 14 sheets of drawings, filed on July 13, 2001. Accordingly, a copy of each requested document is attached herewith. Furthermore, Applicants note that reference will be made hereinafter to the English Translation of the Specification and Drawings submitted on July 13, 2001, as requested by the Examiner.

Claims 1-14 are now pending in the application. The preceding amendments and the following remarks are believed to be fully responsive to the outstanding Office Action and are believed to place the application in condition for allowance.

The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained therein.

DRAWINGS

The drawings stand objected to for certain informalities. Applicants direct the Examiner to the "Request for Approval of Drawing Change" filed on July 13, 2001 in which Applicants designated Figures 14-15 as "Prior Art." Applicants have attached Figures 14-15, as filed on July 13, 2001, for the Examiner's approval.

SPECIFICATION

The specification stands objected to for certain informalities. Applicants have amended the specification according to the Examiner's suggestions. Applicants note that

the paragraph numbers objected to by the Examiner are incorrect. Applicants have used the correct paragraph numbers from the Specification filed on July 13, 2001 in making the required amendments. Therefore, reconsideration and withdrawal of this objection are respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 1, 3-5, 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant Admitted Prior Art (figs. 14-15) (AAPA hereinafter) in view of Kazuo (JP #61-256237) and further view of Aloni et al. (U.S. Pat. No. 6,360,005).

This rejection is respectfully traversed.

Independent Claim 1 calls for a method for examining foreign matters in through holes, including passing light through a plurality of through holes and taking image data “by relative translation movement of a line sensor camera.” See Specification at pg. 4, Paragraph [0015]. Furthermore, independent Claim 1 calls for a step of comparing regions that receive individual passing light to determine the presence or absence of foreign matter. See Specification at pg. 6, Paragraph [0034].

Independent Claim 8 calls for an apparatus for examining foreign matters in through holes including a light source provided on one side of a work piece and a line sensor camera provided on the other side of the work piece. See Specification at pg. 4, Paragraph [0015]. Furthermore, independent Claim 8 calls for a parallel displacement system that “translates the work piece and the line sensor camera relative to each other to allow the line sensor camera to detect light passing through the plurality of through holes in one lot” and an image processing device that “receives detected signals

provided by the line sensor camera to obtain a plurality of binary image data corresponding to the plurality of through holes in the work piece.” See Specification at pg. 9, Paragraph [0042]. The binary image data is received by a processing device “equipped with a determination device that makes a determination as to whether foreign matter is present or absent in the through holes based on deviations among receiving light regions corresponding to the respective through holes.” See Specification at pg. 10, Paragraph [0046].

In this manner, the present invention includes a light source and a line camera disposed on opposite sides of a work piece. See Specification at pg. 4, Paragraph [0014]. The work piece includes a plurality of holes such that light from the light source may be transmitted through the work piece and be received by the line camera. See Specification at pg. 4, Paragraph [0015] and Figure 2. In addition, a parallel displacement system is used to translate the work piece and the line camera relative to one another to detect light passing through each individual hole of the work piece. See Specification at pg. 4, Paragraph [0015] and Figures 2 and 3. The detected light is transformed into binary data and then sent to an image processing device to make a determination as to whether foreign matters are present or absent in the through holes based on deviations among receiving light regions corresponding to the respective through holes of the work piece. See Specification at pg. 4, Paragraph [0015].

Aloni fails to teach such a relationship. Rather, Aloni teaches locating faults in “*adjacent* dies” on a photomask to determine differences between two photomasks. See Aloni at Col. 1, Ins. 35-41 (*emphasis added*). In this manner, Aloni fails to teach or suggest locating and detecting faults based on properties of a *single* work piece. The

present invention discloses measuring and comparing individual through holes of an individual work piece to determine the presence of foreign material in each of the through holes. See Specification at pg. 6, Paragraph [0034].

Applicants also note that Kazuo does not teach or suggest translation movement of the line sensor. The Examiner agrees with Applicants that Kazuo is deficient in this respect but asserts that "Kazuo's translation movement of the pattern relative to the sensor camera (fig 1) would create the same image data as the claimed invention." See Office Action mailed March 5, 2004 at pg. 4. Applicants respectfully submit that the movement of the pattern in Kazuo would not produce the same image data as the claimed invention. The slight movement of the pattern relative to the sensor camera of Kazuo would not produce the same image data as the claimed invention as the slight movement disclosed in Kazuo is directed to comparison of the same object or pattern under observation. Applicants' invention is directed toward observation and comparison of a plurality of through holes, accomplished through relative movement between the work piece and the line sensor camera. Kazuo is directed at observation of a single pattern. For at least this reason, Kazuo also fails to teach or suggest each and every element of the present invention.

Because Aloni does not disclose measuring and comparing individual through holes of an individual work piece to determine the presence of foreign material in each of the through holes, and none of the cited references cures this deficiency on Aloni, Applicants' invention is not taught or suggested by the prior art and reconsideration and withdrawal of the rejection is respectfully requested.

In this manner, it is believed that independent Claims 1 and 8, as well as Claims 3-5, respectively dependent therefrom, are in a condition for allowance in light of the art of record. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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